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Strategic–Operational Command and Control In The American Civil War

A Monograph
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ABSTRACT

STRATEGIC -
OPERATIONAL COMMAND AND CONTROL IN THE AMERICAN CIVIL WAR--AN OVERVIEW by LTC Gary B. Griffin, USA, 46 pages.

The American Civil War introduced the operational level of war and with its introduction came one of the greatest challenges ever confronted by military commanders--operational command and control. In that regard, the objective of this monograph is to determine by what means high level Civil War commanders, here defined as army or army group equivalent, dealt with that challenge.

First, the characteristics of the war that led to its being considered the first conflict to experience "operations" is described. Second, the command structure and general staff organization of late Civil War Union field armies is addressed. A description of the different means of exercising command and control over those armies form the main body of this study and includes the roles played by staffs, aerial telegraphy and electro-magnetic telegraphic systems. Finally, an example of the ways in which the various command and control means were used is offered through an analysis of the planning and early execution of the Union Army's 1864 spring offensive--Grant's final campaign.

Strategic-Operational Command and Control in the American Civil War--An Overview

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Introduction

The American Civil War introduced the operational level of war and with its introduction came one of the greatest challenges ever confronted by military commanders--operational command and control. In that regard, the objective of this monograph is to determine by what means high level Civil War commanders, here defined as army or army group equivalent, dealt with that challenge.

First, the characteristics of the war that led to its being considered the first conflict to experience "operations" will be described. Second, the command structure and general staff organization of late Civil War Union field armies will be addressed. A description of the different means of exercising command and control over those armies form the main body of this study and includes the roles played by staffs, aerial telegraphy and electro-magnetic telegraphic systems. Finally, an example of the ways in which the various command and control means were used will be offered through an analysis of the planning and early execution of the Union Army's 1864 spring offensive--Grant's final campaign.

The Civil War and the Origins of Operational Art

Historians have argued over whether the American Civil War was the last "Napoleonic" conflict or the first modern

war. Clearly the Civil War exhibited characteristics of both and therefore can be considered a transitional historical experience. Nevertheless, there are several features of the conflict that distinguish it from the wars fought before it. Today, these characteristics are normally associated with the execution of operational art.

The most significant of these characteristics is the absence of a single decisive battle, a battle both sides vainly hoped First Bull Run would be. This lack of a climactic battle has been described by one historian as a "newly indecisive element of modernity...hailed as the dividing line between the warfare of the past and that of the present."[1] Instead of a single decisive battle it was the cumulative effect of a series of great clashes such as Gettysburg, Vicksburg, Chickamauga and a score of other monumental engagements that ultimately decided the American Civil War's outcome. There were no Waterloos. Aside from the role of generalship there are a number of reasons explaining the absence of a Napoleonic decisive battle in the American Civil War.

Principle among these reasons was the inability of the opposing armies to destroy one another through a single engagement. This was due to the size and mobility of Civil War armies. In many ways these characteristics were a function of a new historical era--the industrial age. The political and ideological sophistication of societies, the

Industrial Revolution, progress in agricultural technology, development of mature economic and political infrastructures and even birth rates contributed to nations being able to raise, equip and sustain armies of enormous size. For the first time in history a nation's capacity to field forces outstripped its opponent's capacity to destroy them in a single blow.

Relative to the past large bodies of troops could be quickly dispersed through steam driven ships and a vastly improved road and rail network. Deployed in accordance with strategic and political considerations, the massing of these armies for a single battle was impractical. As an alternative, field armies operated independently often in their own separate theaters of operations. This feature of independent action on behalf of separate armies is a second characteristic of the new form of warfare.

So, instead of an <u>army</u> fighting a single decisive battle, <u>armies</u> engaged in a series of clashes. Ideally, under the guise of a campaign plan, these distributed battles were designed to destroy an enemy incrementally. This phenomena is a third characteristic of mid 19th Century war--the necessity for associated successive, simultaneous, and sequential battles known as operations. In the case of the American Civil War it was not until late in the war, with the appointment of Lieutenant General Ulysses S. Grant as General-in-Chief commanding all Union Armies, that the

necessity of coordinated operations was clearly recognized as conditional to strategic success.

In order to focus and orchestrate the efforts of these widespread independent armies the overall commander had to possess a clear vision of just how strategic success could be attained. This is a fourth characteristic of operational art and clearly the most meaningful to the subject of this study. This vision, or strategic-operational master plan, had to include the psychological-physical, cybernetic and harmonic components required for successful operational execution.[2]

In summary, it is clear that late Civil War Union Army operations exhibited the characteristics associated with the execution of modern operational art. These four characteristics: the absence of decisive battle, independent armies operating in separate theaters, simultaneous, sequential, and successive battles and a commander with the vision to focus and integrate all of his assets to achieve the decisive cumulative effects necessary to attain strategic success, distinguish the American Civil War from previous conflicts.

All four of these characteristics relate to command and control and form the criteria for analysis in this study. Accordingly, command methods and systems will be examined to determine what roles they played in the planning and execution of operations exhibiting these four features of

modern warfare. Nevertheless, key to understanding the command and control challenges confronted by Civil War operational commanders is an understanding of the organization and force structure of the commands they took on campaign.

Union Army Organization and Force Structure

At the outbreak of the Civil War the United States Army consisted of a total of 16,000 men enrolled, with 15,000 present for duty. At peak strength, four and one half years later it would number over one million with almost 750,000 soldiers present for duty.[3] Relative to the size of the armies preceding the period the U.S. Army was a massive organization indeed. By war's end it was also a highly sophisticated and complex organization "superior to anything achieved in Europe until von Moltke forged the Prussian staff machine".[4]

The base organization for this huge army was the infantry regiment consisting of ten companies. The regiment's official minimum strength was fixed at 867 soldiers with a maximum of 1047 ultimately being permitted.[5] Two to four regiments formed a brigade and in turn, two to four brigades a division. As regiments were reduced by casualties it took a greater number of them to form a brigade. For example, by 1864 some brigades of the Army of the Potomac consisted of as many as twelve regiments.[6] Despite the organizational and strength

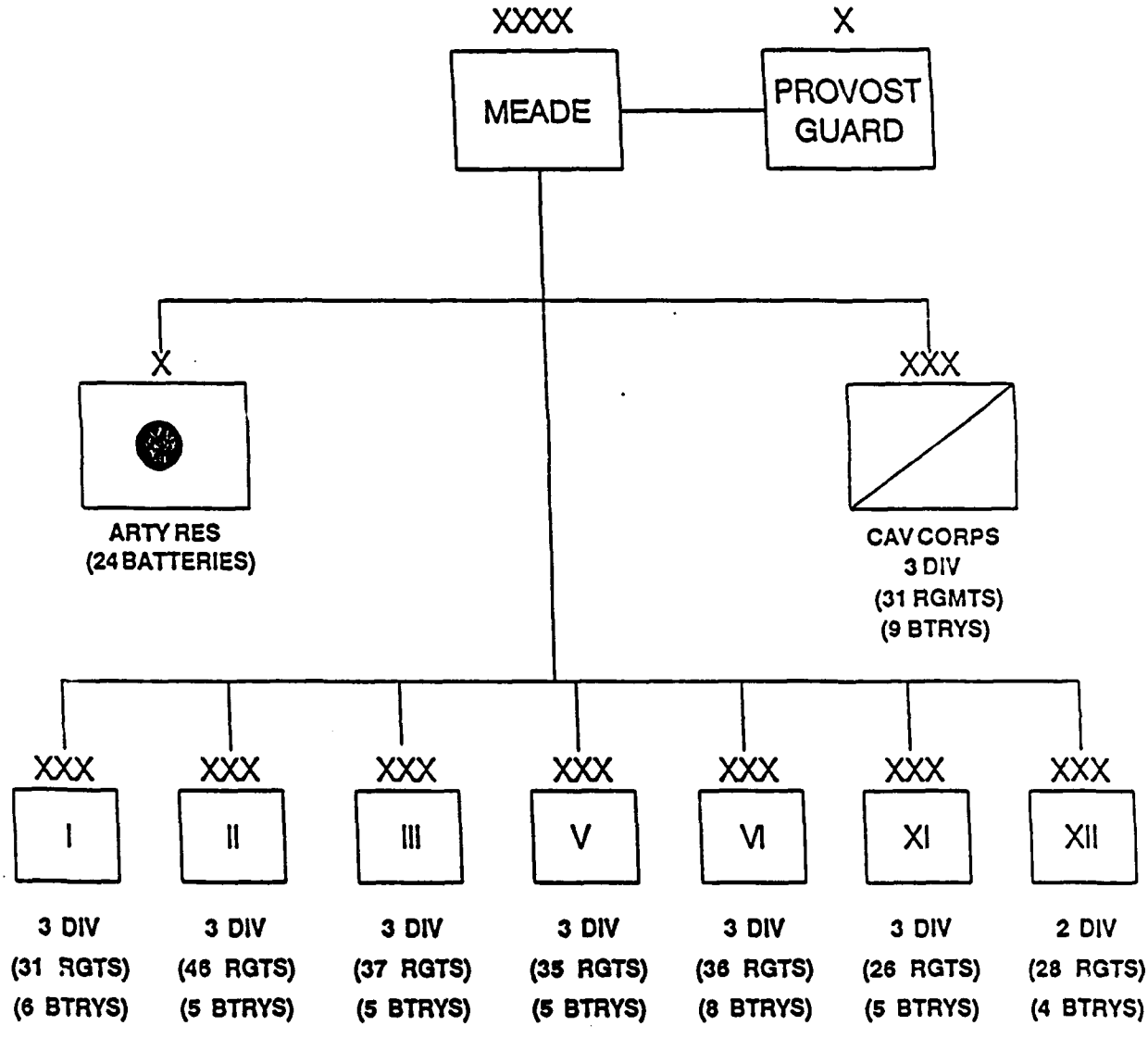
differences between them, however, brigades ultimately became the basic tactical unit.

In addition to infantry brigades an artillery battery of six guns of like caliber, and a cavalry brigade, were attached to divisions. In 1863, however, the structure was modified in the Army of the Potomac with the artillery being consolidated at corps level and the cavalry formed into separate divisions. On occasion entire cavalry corps were formed.[7]

Corps of two to three divisions were officially authorized for organization in the Union Army in July 1862.[8] These corps were relatively flexible organizations which numbered approximately 20,000 soldiers but could expand to as many as 60,000.[9] Larger corps sometimes operated independently and were designated an army. There was also some limited experimentation with intermediate sized two corps organizations referred to as "Grand Divisions".[10]

Union field armies consisted of as many as eight corps. With additional artillery and cavalry their strength grew to as many as 200,000 (See Figure 1 for a type Civil War field army organization).[11] Nevertheless, the field army was by no means the largest formation of troops during the war. By 1865, the last year of the conflict, there were instances in which several of these armies were under a single commander--the contemporary organizational equivalent of an

THE ARMY OF THE POTOMAC - 1863



Estimated Totals - 240 Regiments of Infantry
31 Regiments of Cavalry
71 Batteries of Artillery
85,500 Men
370 Guns/Howitzers

FIGURE 1

Source: Civil War Battles, (New York: Fairfax Press, 1977) p 90- 91.

army group. For example, as General-in-Chief in 1864 Grant commanded several army group equivalents including Sherman's which consisted of no less than three separate and distinct armies.[12] Grant has also been recognized as the "first commander known in history to deal successfully with the army of a million in size".[13]

Civil War organizations were both complex as well as sophisticated. In addition, they were highly variable and differed somewhat in structure from theater to theater. No two armies were identical and, in terms of standard tables of organization, neither were divisions. The main point is that Civil War operational formations were large and drawn along modern organizational lines.

There were also a large number of engineer, medical, quartermaster and other auxiliary troops and ancillary equipment that accompanied these combat arms formations. For example, in addition to manpower, there were 33 wagons required per 1000 troops and correspondingly two draft animals for every soldier.[14] Considering that a single corps occupied 14 miles of road space and an army's "parks" and reserve ammunition train as much as 15, the demands on command and control systems to coordinate the movement, or even the most mundane military activities of a deployed field army on campaign, were enormous.[15]

The scope of the effort must have boggled the mind of staff officer and commander alike considering the size of

the American Army some had served in before the war began. Nevertheless, that was exactly the challenge Civil War operational level commanders and staffs confronted.

Union Army Staff Organization

There were only two U.S. Army officers with command experience above the regimental level at the outbreak of the war, Generals Winfield Scott and John Wool. There was also a noticeable lack of staff officers with large unit experience. The Army staff was purely administrative with no war planning responsibilities whatsoever.[16] And there lies the principle problem, for staffs are a critical element in the command and control process because of their role in planning operations as well as supervising and supporting their execution. With the designation of operational level commanders, high level staffs were appointed despite the dearth of experience. Civil War commanders were keenly aware of staff inadequacies early in the war. When referring to the staff officer shortage when he was in command of the Army of the Potomac, General McClellan wrote:

> One of the greatest defects of our military system is that lack of a thoroughly instructed STAFF CORPS, from which should be furnished chiefs of staff for armies, army corps, and divisions, adjutants general, and aides-de-camp and recruiting officers. Perhaps the greatest difficulty that I encountered in the work of creating the Army of the Potomac arose from the scarcity of thoroughly instructed staff officers, and I must frankly state that every day I myself felt the disadvantages under which I personally labored from the want of that thorough theoretical and practical

education received by the officers of the German General Staff.[17]

The staff officer problem arose not from the absence of doctrine, for the Army Regulations of 1861 provided for staff organization at least up to brigade level.[18] The obvious problem was that the doctrine was woefully inadequate for the task at hand--the control of division, corps, and army level formations. Additionally, there were no staff schools or colleges and no practical theory for the role to be played by higher level staffs. For the most part staff officers learned through hard experience. There were, however, numerous attempts to remedy the situation.

Despite his well known shortcomings as a field commander, McClellan played a major role in modernizing Union staff organizations. One of his first improvements was the appointment of a Chief of Staff for the Army of the Potomac.[19] Although unsophisticated by today's standards, other improvements were made in staff organization as the war progressed. By the end of the conflict staffs existed at virtually every level of command (See Figure 2).

Army level staffs varied greatly in size and organization. As commander of the Army of the Potomac, for example, McClellan's staff ultimately numbered 65 officers with 19 aides-de-camps.[20] Grant, meanwhile, in essence commanding the same army several years later, maintained a staff of only 13, the equivalent of a Civil War division

Regular Army Authorized Staff
Battalion Thru Corps

BATTALION	-	1 Major - second in command or "Executive Officer"
	-	Bn Adjutant - Lieutenant
	-	Bn Quartermaster and Commissary - Lieutenant
	-	Sergeant Major
	-	Quartermaster Sergeant
	-	Hospital Steward
REGIMENT	-	1 Lieutenant Colonel - second in command
	-	Regimental Adjutant - Lieutenant
	-	Regimental Quartermaster and Commissary - Lieutenant
BRIGADE	-	1 Aide de Camp - Lieutenant
	-	Assistant Adjutant General - Captain
	-	Assistant Quartermaster - Captain
	-	Surgeon - Captain
DIVISION	-	2 Aides de Camp - Captains
	-	1 Assistant Adjutant General - Major
	-	1 Quartermaster - Captain or Major
	-	1 Commissary of Subsistence - Captain or Major
CORPS	-	3 Aides de Camp - 1 Major, two Captains
	-	1 Assistant Adjutant General - Lieutenant Colonel
	-	1 Quartermaster - Lieutenant Colonel
	-	1 Commissary of Subsistence - Lieutenant Colonel
	-	1 Assistant Inspector General - Lieutenant Colonel

Note: Another source, General De Chanal's, The American Army in the War of Secession, describes, in addition to the above, an Ordnance officer at Brigade level and Ordnance, Field Artillery and Signal officers at division and Corp levels. Others outline, Ordnance NCO's, Chaplains and Surgeons being authorized at the regimental level.

FIGURE 2

Source: F. A. Shannon, The Organization of The Union Army, Vol. II, (Cleveland, OH, Clark Co., 1928) p 271- 274.

staff.[21] Meade's headquarters at Gettysburg, once again with the same army, numbered almost 3,500 soldiers.[22] The disparity can be attributed to a number of factors from circumstantial to command style, desire for security and in some instances sheer extravagance.

The normal army staff, however, appears to number no more than 20-25 staff officers exclusive of aides and enlisted assistants. These staffs were further divided into three types, the general staff, staff corps/staff departments and special staffs. The generals staff included adjutants, assistant adjutants, aides-de-camp inspectors generals and their assistants as well as a chaplain. Staff departments were organized along functional lines and consisted primarily of supply, ordnance, medical and judge advocate general officers. Special staffs were branch based and included among others a chief of artillery, engineer, and signals as well as civilian specialist augmentation (See Figure 3 for a type army staff).[23] Civilian augmentees have also been referred to as "shadow staffs."

Considering the criteria for this study the most critical element of the overall staff was the general staff. That does not mean other staff members failed to play a major role, especially in the organization of supporting arms, logistics and transportation. The primary purpose here, however, is the roles and missions of the general

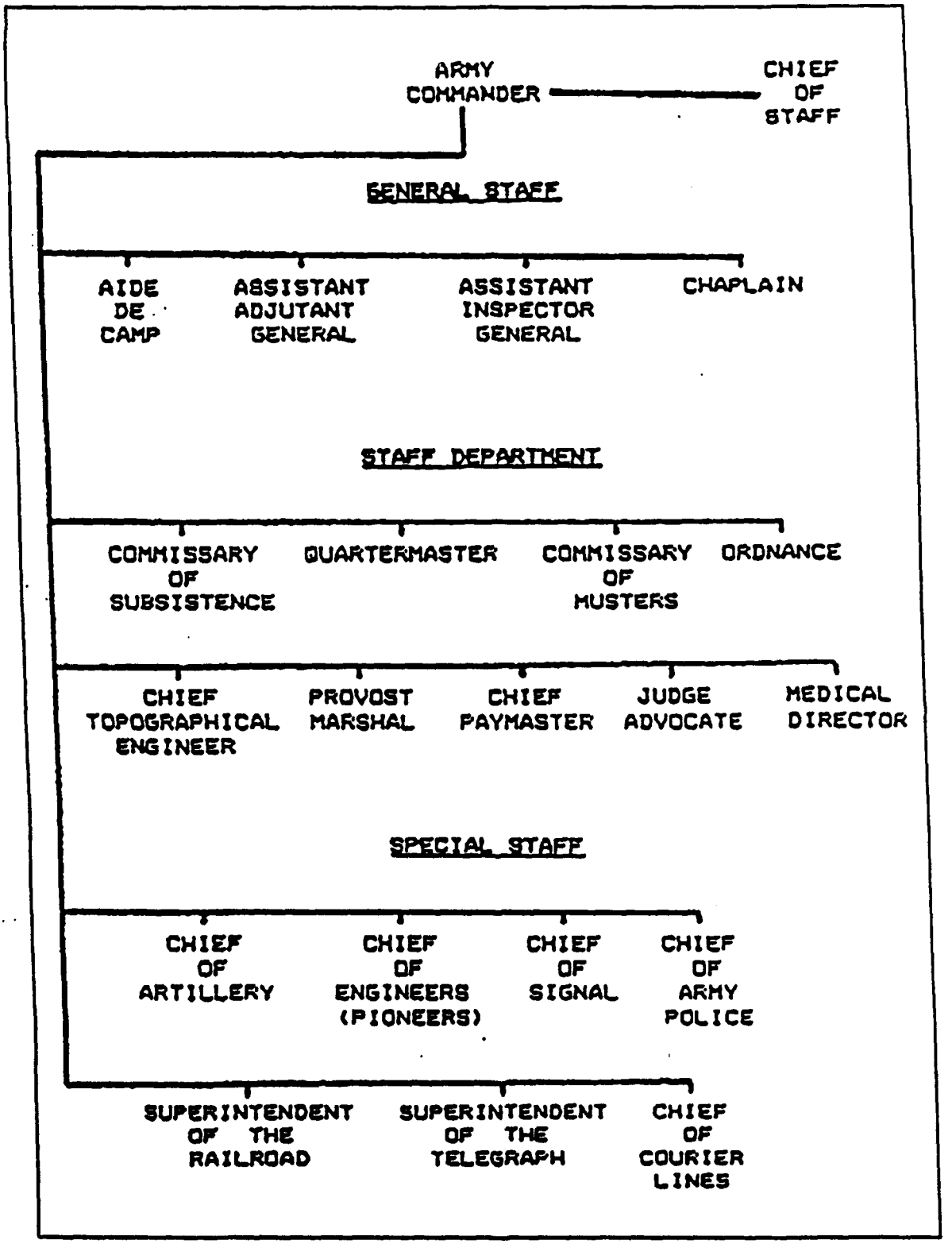


FIGURE 3

Source: Robert D. Richardson, Rosecrans' Staff at Chickamauga (USACGSC MMAS) 1989, p. 24.

staff, specifically the chief of staff, adjutants, and aides-de-camp. A retrospective summary of their responsibilities, drawn from a book on general staffs published in 1899, offers an excellent explanation of their duties. They included:

> 1. Working out all arrangements necessary for quarters, precautions against surprise, movements, and battle.
> 2. Communicating the necessary orders, either verbally or in writing, at the right time and place, and in sufficient detail.
> 3. Obtaining, collecting, and compiling in order all information concerning the nature and the military character of the theater of war. Procuring maps.
> 4. Collecting and estimating the value of information received concerning the enemy's forces.
> 5. Watching over the fighting condition of the troops, and being constantly informed of their efficiency in every respect.
> 6. Keeping journals and diaries, drawing up reports on engagements, and collecting important materials, to afterwards from a history of the war.
> 7. Special duties, viz, reconnaissances, etc.[24]

The relevance of these duties to the successful execution of operational command and control is obvious. Most important perhaps are the first four. The first clearly applies to the planning of operations which during the Civil War was the realm of the army commander, his principal subordinate commanders (a war council) and an inner circle of trusted aides and advisors under the direction of a chief of staff. A reflection of a highly personalized system of command this later group of officers has often been referred to as directed telescopes.[25] Charged with the duties of supervising the execution of

orders arising from plans of operations it is this element of the staff that played the major role in command and control.

Command and Control Systems

It was exceedingly difficult, if not impossible, for the Civil War army level commander to "see" anything other than that area of the battlefield in which he was physically located--ideally the decisive point. Along the same lines his personal leadership could only be directed among those subordinates immediately surrounding him. This inability to influence events beyond his immediate reach was of course not a new challenge but a timeless one. It was exacerbated, however, by the operational conditions of the Civil War, especially before dispersed armies concentrated for battle, or when multiple armies were simultaneously engaged in coordinated operations in different theaters. This was just the situation confronted by the Union Army during the last year of the conflict.

One answer to this traditional, albeit now more challenging problem, was a time honored Napoleonic solution--the use of aides as couriers. By some accounts couriers "remained the chief means of communication, even in the technological late-war Union armies".[26] This was especially true at the tactical-operational level interface of the continuum and in the communications of plans. They were more effective than other systems for communicating

long orders and of course explaining accompanying maps and associated instructions. The design of courier systems varied greatly but at the Army level officer aides-de-camp were used more often than not. This means of exercising command and control was also usually limited to intra-army communications. There were, nevertheless, obvious strengths and weaknesses with couriers.

The strengths of the use of couriers as a system of command and control remains so today--they are a highly secure means of communication. Unlike magnetic telegraph or signal flags, couriers were not vulnerable to wiretapping or visual compromise. Nevertheless, there was a significant risk in employing couriers for operational purposes for they had to ride great distances. As a result they ran an increased chance of experiencing capture, wounds or death. Nevertheless, if the right aide was used to not only deliver the message, but to explain the intent behind it, positive results could be gained. Even better, if he were to assist in the supervision of the orders proper execution, providing guidance in line with the commanders overall concept especially when unforeseen circumstances arose, the result could be decisive. An aides' presence could prove the key factor in defeat or victory. This type of courier fits the classic directed telescope definition. They were employed with great effect by several successful Union generals including both Grant and Sherman.

The weakness of the courier system was the same as its strength--it was personal and "word of mouth".[27] Other than getting lost, killed or captured the courier could be the "wrong" man for the moment. A poorly selected courier may be unable to explain an order, communicate its intent or even worse misinterpret the message or simply season it with his own misguided opinion. Needless to say disaster could ensue.

These are many obvious "human" problems associated with the use of couriers as a command and control system. These problems highlight one of the most critical imperatives of command--the absolute necessity for accurate and well written, clear cut and concise orders, for they could compensate for the human weaknesses of the courier system. As one historian described:

> Orders must be short, legible, unambiguous, informative and-if possible-inspiring. They must say who they are from and when they were sent; to whom they are sent and why. They must state times and places of movements intended, plus as much background as possible-things like general intentions of the army commander, actions by supporting troops, or information about enemy or terrain which the recipient will need. The recipient must be put in the picture as well as spurred into action.[28]

Grant and Sherman were both well known for the clarity and precision of their writing. So were their chiefs of staff.

Second to mounted couriers the most common means of communicating operational level information was flag

telegraphy also known as wig-wag.[29] Although not an entirely new concept the American system of flag telegraphy represented a major advance over its Napoleonic predecessor. The American system of flag telegraphy was invented in 1856 by Major Alfred J. Myer, an army physician.[30] Frustrated by the inadequacy of existing communications systems in the American West (post and courier); Myer devised a system based on his observations of Comanche Indian signaling techniques. Patented and tested by the United States Army four years later the system proved effective at communicating distances of up to 15 miles using flags by day and torches at night.[31] With that range the system had obvious operational value.

The concept behind wig-wag was simple. Similar to semaphore it was based upon the coded movement of contrasting colored "action" flags mounted upon long poles. For example, a 16 foot long pole could be used effectively to communicate a distance of up to 25 miles![32] Although elementary in theory the system was relatively complex in practice. Coded numbers were assigned letters, words or even entire phrases. The selection of flag colors was based on atmospheric conditions and the nature of the surrounding terrain. Stations were selected based on intervisibility, position of the sun during anticipated periods of peak operations and numerous other "scientific" considerations among them visual distortion due to heat induced atmospheric

undulations.[33]

There were also formal tables of organization for the manning and equipping of wig-wag signal detachments at both the field army and corps levels. Each army headquarters was authorized a 18-20 man signals detachment while each corps had as many as 60 officers, non-commissioned officers and soldiers assigned.[34]

The teams were further sub-divided into six man elements consisting of two officers and four flagmen. They were mobile and well provisioned. Self supporting, they were designed to operate independently without any assistance from the supported headquarters. Signal wagons were not field fabricated but contract designed and built to army specifications. A typical signals wagon consisted of up to 1,200 colored lights, 500 signal rockets and other pyrotechnics whose value was primarily tactical.[35] The ten mile capability, coupled with the team's technical skills and mobility, made wig-wag a vital operational level communications asset used both for command and control as well as intelligence gathering and reporting.

Wig-Wag was effective in both static and fluid situations. It was an especially critical strategic-operational communications system early in the war. The famous 90 mile Potomac Line, for example, was a chain of fixed sites that were active throughout the conflict communicating reports and orders from the battlefields of

northern Virginia to the nation's capital. It was this line that proved the strategic-operational utility of the system and gave rise to the famous expression "All quiet along the Potomac".[36]

Wig-Wag was also used extensively during operational movements and in the control of reserve formations. Operational application of the system can be seen in the standing instructions to signal detachment commanders:

> The officers in charge will report to the commanding general the readiness of the party to move with the column. It is particularly enjoined upon signal officers to proffer, to the commanding general their services whenever they can be of use, as in crossing rivers, keeping up communication between different bodies of the same command. In the case of battle signal officers should always aim to keep the communication between the line engaged and the reserve...[37]

Flag telegraphy was the primary means of controlling the movement and concentration of the widely separated corps of the Army of the Potomac at Antietam, Chancellorsville and Gettysburg. In addition to controlling operational maneuver and reporting intelligence, wig-wag was used for ship to shore communications during joint operations and in coordinating fire support.[38]

Despite the flexibility and utility of the innovative wig-wag flag telegraphy system it had several drawbacks, the effects of adverse weather and visual interception were the greatest. As a result of these and other problems (e.g., the vulnerability of signal sites to sniper and artillery fire), by the latter half of the war military telegraph and

Morse equipment took over as the primary means of operational communications.

One indirect contribution wig-wag did make, however, was to earn respect for the operational communications capabilities of the fledgling U.S. Army Signal Corps. Meade had such respect for the system that he brought "signal officers to the conference table for consultation on the plan of battle."[39] Historically, however, the most famous communication system of the American Civil War, and the instrument that ties it more closely to modern war versus its Napoleonic predecessor, is the telegraph.

The Civil War, however, was not the first to witness use of the telegraph for military operations. The British Army used telegraphs in the Crimea in 1854. Positive reports of its use were submitted by a U.S. Army observer--then Major George B. McClellan. The British also used the telegraph in India three years later. They even included telegraph instruction in their officer education programs. Other European armies picked up on the innovation quickly with the Germans being the first to integrate telegraph units into their peacetime force structure. The French were the second army to use the system in their operations in Algeria during the same period.[40]

Regardless of its use by the Europeans, the American Civil War marks the telegraph's first use on a large scale across the operational continuum.[41] Its use by the United

States Army in the early years of the war, however, was plagued by a number of organizational, technical and personnel issues.

The core of the problem was the existence of two separate telegraphic systems--the U.S. Military Telegraph and the Army Signal Corps. This lack of unity of technical and organizational effort severely effected its early strategic-operational utility.

Justifiably, the U.S. Military Telegraph is clearly the most well known of the two systems. Following the outbreak of the war Secretary of War Simon Cameron contracted the services of the country's leading businessmen representing the nation's major railroads and telegraph system. The result was the "de facto" federalization of the American Telegraph Company consisting of the Western Union and Southwestern networks as well as smaller associated spur lines. The establishment of this agency, primarily under civilian leadership, clearly encroached upon the interests of the U.S. Army Signal Corps which wanted, quite understandably, to centralize all communications systems, strategic and otherwise, under its authority. The Appointment of Edwin M. Stanton, ex-director of the Atlantic and Ohio Telegraph Company, to Secretary of War in January 1862 meant the end of any effort on behalf of the Signal Corps to consolidate control.[42]

The end result was the U.S. Military Telegraph's

control of an existing strategic-operational network tied closely to railroad lines of communications while the Signal Corps operated more mobile system for operational-tactical field communications. The systems were separate but mutually supporting Signal Corp's systems would often patch into "strategic" or trunk lines of the U.S. Military Telegraph system to pass tactical or operational high priority traffic.

By the end of the first year of war the U.S. Military Telegraph had gained departmental status under an assistant Secretary of War for Military Railroads and Telegraphs. The Department's military head was a general officer Chief of Military Telegraph. Despite the tension between the U.S. Military Telegraph and the Signal Corps it is to the former's credit that it fully recognized the necessity of a comprehensive tactical system--with "Army wire lines between every major headquarter and the closest commercial telegraph office."[43]

The impetus for the approval of the Army's own telegraph system, at least at the tactical level, was the infamous Patterson telegram incident of First Bull Run. During that battle a vital piece of operational intelligence was "lost" between McDowell's headquarters and the local telegraph office ten miles distant.

The challenge of organizing the Army system once again fell to Major Myer, the father of wig-wag and the leading

proponent for a mobile telegraphic system that would be more secure and responsive to the needs of army level and below commanders in the field. Myer described his system as a field telegraph train consisting of two horse-drawn telegraph terminal vans equipped with instruments, batteries, lance poles, insulation and reels of wire. Extremely expensive for its day ($2,500 per train), each wagon could carry up to five miles of insulated wire giving the train a ten mile wire laying radius. The new commander of the Army of the Potomac, General George B. McClellan, met Myer's proposals with great enthusiasm. With McClellan's backing, despite the somewhat skeptical and reluctant support of several members of the Telegraph Department, a single field telegraph train was authorized for procurement for service with the Army of the Potomac in August 1861. With that decision electro-magnetic telegraphy was introduced to the battlefield.[44]

With resolution of the organizational problem, Myer now confronted the personnel and technical challenges of his proposal. The primary problem with personnel was the lack of skilled operators. Simply stated, the Military Telegraph had hired them all. Myer's attempts to recruit them into the Signal Corps resulted in increased friction between the two organizations. The technical challenge was more difficult to resolve and involved the development of suitable equipment to withstand the rigors of field use, a

power supply and associated cryptographic secure devices. Regardless, by March 1862, with the assistance of McClellan's Chief Signal Officer Captain Cushing, Myer set up what amounted to the Army's first signal laboratory where the technical and tactical demands of the field telegraph were worked out. The result was the cipher disk (See Figure 4) and a militarized version of the Beardslee telegraph system originally invented in 1859 (See Figure 5).

The Beardslee was selected primarily because it was electro-mechanical and required no batteries. It also required little training to operate. This advantage in part compensated for the lack of available operators. As long as the system was synchronized a good operator could transmit and receive at a rate of "fifteen words a minute--which was five times the speed required of flagmen".[45] Myer's train saw its first use during the Peninsula Campaign, the "first major offensive in modern times to have the support of a fully organized system of flag telegraphy" and "the use of electric telegraphy well forward of army headquarters."[46]

Not unexpectedly the 30 day trial performance of the Beardslees proved at best indifferent and at worst poor. An 1862 report summed up its performance best:

> ...it will be recalled, at some time hereafter, with no little pride, that field telegraph trains, of this character, and thus equipped, were first brought into use by the Signal Corps of the Army, and were first used with the Army of the Potomac.[47]

Already competing with the Beardslee was the more

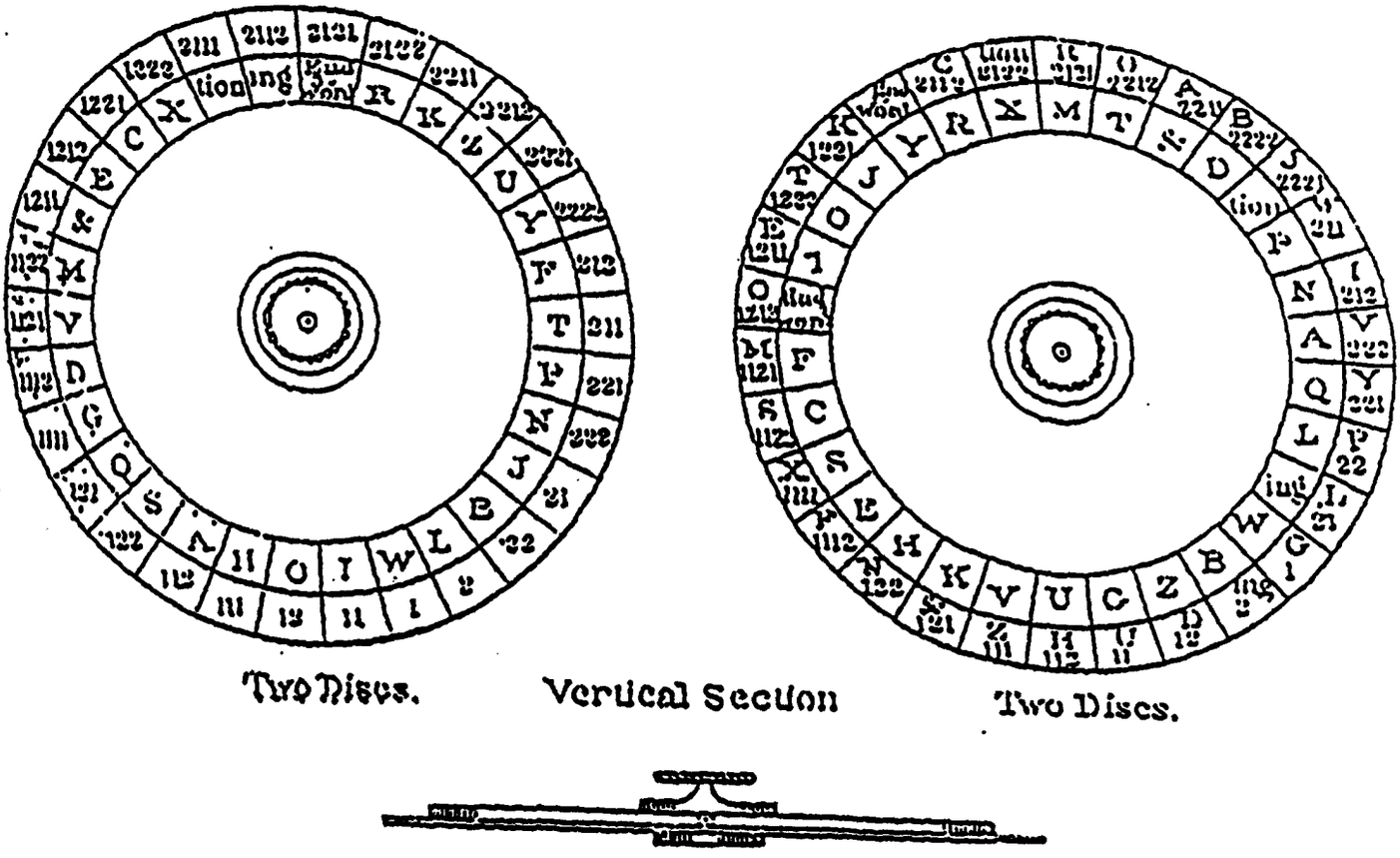


FIGURE 4

Source: J. W. Brown, The Signal Corps, USA, p. 119.

FIGURE 5

Source: Curt Johnson and Mark McLaughlin, Civil War Battles, (New York: Fairfax Press, 1977) p. 25.

reliable Morse telegraph system being installed in theater down to corps level by the Military Telegraph Department. Nevertheless, by the end of 1862 the Army had grown completely dissatisfied with the Beardslee due to range, reliability and synchronization dif'iculties. Failing to gain widespread acceptance, efforts were made to switch to the Morse system which at the time was being was being employed in tests with an experimental portable battery power source.

Needless to say, the Signal Corps rightfully perceived its control of tactical-operational communications being threatened by the Morse experiments. As could be expected Secretary Stanton came down on the side of the Military Telegraph Service which in 1863 assumed responsibility for both long lines, and through the Signal Corps, field telegraphs. As a result of his unwillingness to support the official position on the issue Major Myer was relieved of his duties as Chief Signal Officer of the Army. He was reinstated after the war.

By the end of the Civil War the Military Telegraph Service alone had laid more than 15,000 miles of wire and had transmitted an estimated six and one half million messages.[48] The amount of Signal Corps wire laid and messages transmitted are impossible to calculate. Through the telegraphs of both systems armies were able to rapidly communicate with one another and the nations's capital

despite the distances involved. Wire lines at times extended down to division level and even lower with entire army level "hot loops".[49]

As historian John Keegan states in The Mask of Command, "The introduction of the telegraph underlay the first clear technical transformation of the general's role since the beginning of organized warfare".[50] For the first time in war the clarity of the commander's vision and the near immediate effects of his decisions could be felt far beyond the battlefield where he physically presided. Operational art was exercised through operational command and control vis a vis the telegraph. There is no finer example of this revolutionary command experience in the American Civil War than Grant's final campaign.

Grant's Final Campaign

In contemporary terms Grant was clearly an operational as well as strategic level commander. He reported directly to the President through the Secretary of War and was responsible for a theater of war that was larger than Napoleon's at its zenith".[51] Covering four territorial divisions extending from the Atlantic seaboard to the Rocky Mountains his command totalled no less than 17 subordinate field armies or corps equivalents. He commanded almost one million troops, of which at least 500,000 were combat soldiers. Indeed, the United States Army of 1864, of which Grant was the General-in-Chief, represented the full

maturity of the American military experience up until that period in United States history.

In order to execute the new national strategy Grant relied upon an experienced albeit small staff and a vast flag and electro-magnetic telegraph system. Key to the effective use of these command and control systems was his ability to express his intent, vision and plans either verbally or through the written word. Grant was especially adept at both mediums. He was equally gifted in his command style which is best described by the now popular term "auftragstaktik". For example, as Grant told one of his staff officers, "When I have sufficient confidence in a general to leave him in command of an army, I have enough confidence in him to leave his plans to himself."[52]

An analysis of his concept of operations for the 1864 campaign reflects his operational planning and command genius. In addition, it serves as an excellent point of departure for a description of the command and control systems he employed to communicate and execute it.

Upon his appointment as General-in-Chief, and promotion to Lieutenant General in the first week of March 1864, U.S. Grant was ordered to Washington. He was required to keep in constant telegraphic communication with both his command as well as the capital while enroute.[53] Within a week of his appointment Grant was communicating with his subordinate army and departmental commanders by letter and telegram. He

described to them in general terms how he saw the campaign unfolding. He would command from the field satelliting off of the Army of the Potomac's command and control systems which were the best in the Army at the time. Major General Halleck would remain in Washington as the Army Chief of Staff to administer the Army. This combination of commander in chief, general in chief and chief of staff gave the Union the country's first system of modern strategic-operational command.[54]

Although by his own admission he had not "fully determined a plan for campaign by spring", he knew it was essential that all Union forces act "in concert" with one another with the focus on the "conquering of organized armies of the enemy as being of vastly more importance than the mere acquisition of territory".[55] Grant's ideas were a breath of fresh air for the Union's strategic military and political situation in early 1864 was grim. LTC Adam Badeau of Grant's staff perhaps described it best.

> A score of discordant armies; half a score of contrary campaigns; confusion and uncertainty in the field, doubt and dejection, and sometimes despondency at home; battles whose object none could perceive; a war whose issue none could foretell--it was chaos itself before light had appeared, or order was evolved.[56]

Despite a 15 March dispatch stating his being generally unsure of what form the spring campaign would take it was clear that Grant had a vision. The Official Record is replete with telegrams from Grant to Sherman, Banks, Thomas,

Rosecrans and other commanders ordering the new force alignments and command structure necessary to set the campaign or at least the planning process in motion.[57] Grant's ignoring of Sherman's pleas to make the main effort in the west and the diplomatic skill in which he dealt with the collective leadership of the clique ridden Army of the Potomac, indicates that he was sure that the Confederate center of gravity lay in the east with Lee's Army of Northern Virginia.

Grant recognized that the successful attack of that center of gravity required the simultaneous commitment of all Union armies. The concept behind the plan was a massive concentric advance aimed at the heart of the Confederacy. The Army of the Potomac, with the assistance of the Army of West Virginia and the Army of the James, would move on Richmond from different directions with the objective of drawing out Lee's Army of Northern Virginia and destroying it. Meanwhile Sherman, acting as the "Schwerpunkt", would direct his army group toward Atlanta against the Confederate Army of Tennessee under General J. E. Johnston. Remaining Union armies would undertake offensives in support of these efforts or simply tie down Confederate reinforcements.[58]

By late March, Grant and his staff began planning in greater detail requesting the status of the overall strategic situation from Washington. Remaining in the capital, Halleck was able to take advantage of it being the

strategic communications hub of the nation and was able to provide Grant strategic updates at that point and throughout the remainder of the conflict. With the assistance of Halleck and with the use of maps, directed telescopes, telegraph and even the U.S. Mail, Grant and his staff prepared and distributed the initial campaign graphics. The telegraph was considered so critical at this point in the planning process that Stanton ordered all lines cleared for military traffic much to the chagrin of the press.[59]

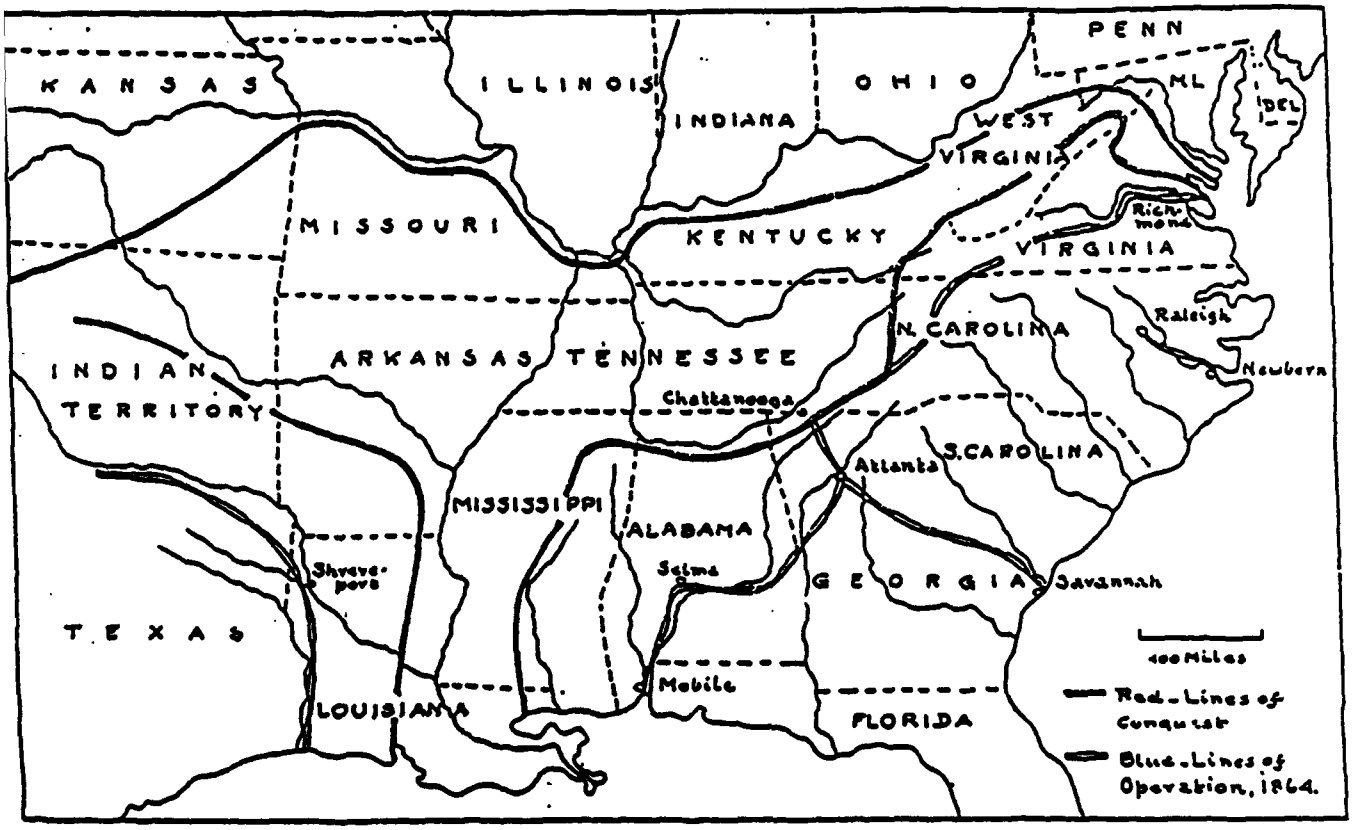
The map (See Figure 6) reflected the strategic situation at the war's outset, the situation as of March 1864 and proposed courses of action for future operations. From the map alone Sherman was able to determine what Grant wanted to accomplish. His response to it in a 5 April letter to LTC Comstock of Grant's staff reflects his enthusiasm for the General-in-Chief's plan:

> From that map I see all...I now know the results aimed at. I know my base, and have a pretty good idea of my Lines of operation...there is no reason why the same harmony of action should not pervade a continent.[60]

The similarities in the terms used by Sherman and the key elements of modern campaign design expressed in contemporary campaign plans is striking. The map was followed by orders several days later that would have similar impact:

> Your two letters of April 4 afford me infinite satisfaction...we are all to act in a Common plan, converging on a Common Center looks like Enlightened war."[61]

In this instance enlightened war was nothing more than the



MAP NO. 9—GRANT'S STRATEGICAL MAP FOR HIS 1864 CAMPAIGN

FIGURE 6

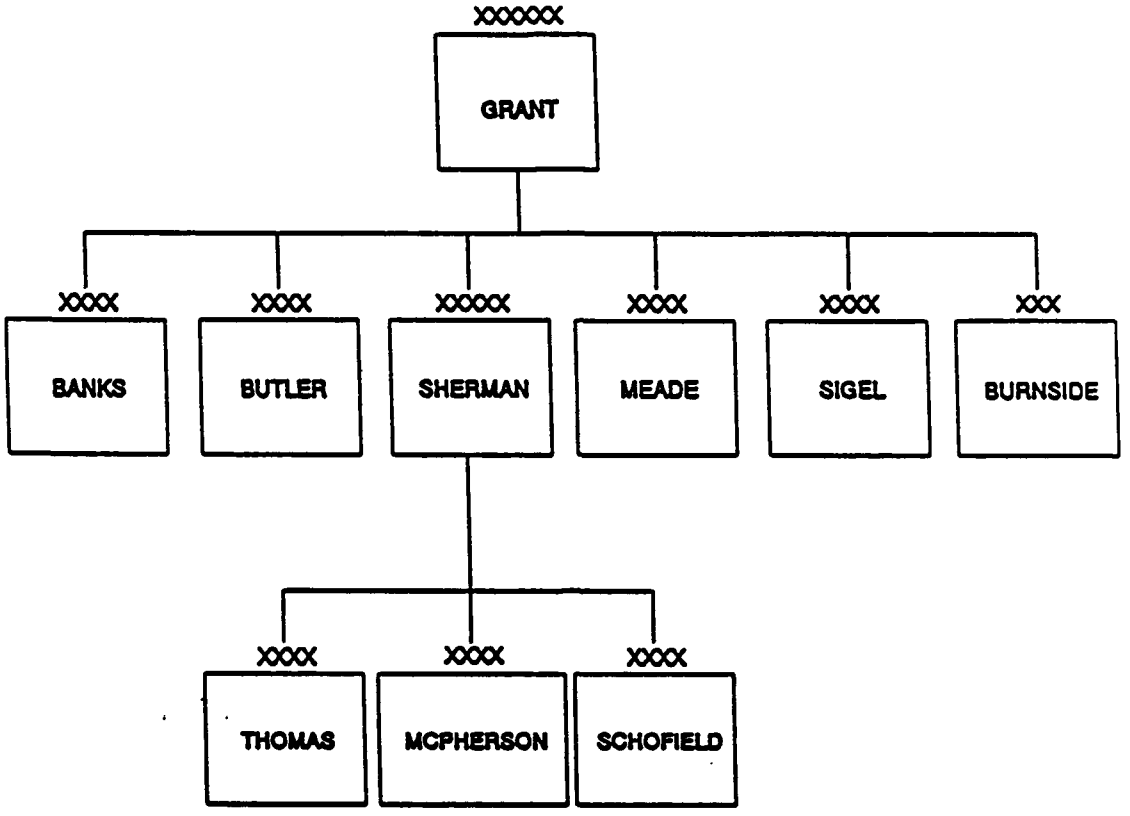
Source: J. F. C. Fuller, Grant & Lee, p. 213.

application of operational art as we define it today.

Grant outlined his campaign plan in separate orders to each of his five principal subordinate commanders (See Figure 7).[62] Questions on the orders were to be transmitted and answered by telegraph. Separate directives were used because of the varying degrees of confidence Grant had in his subordinates. Examples of the complete orders to his two most critical army commanders, Meade and Sherman, are contained in enclosures A and B. An extract of Meade's order follows:

> So far as practical all the armies are to move together, and towards one common centre. Banks has been instructed...to move on Mobile...Sherman will move at the same time you do, or two or three days in advance...Sigel cannot spare troops from his army to reinforce either of the great armies, but he can aid them by moving directly to his front...Butler will seize City Point...His movement will be simultaneous with yours. Lee's army will be the objective point. Wherever Lee goes, there you will go also.[63]

The letters are outstanding examples of the type of orders that need to be provided operational level commanders. In them objectives are clearly identified as is commander's intent. End states, centers of gravity and subordinate objectives are also explained. Even phases can be determined. Both orders call for simultaneous, synchronized and sequential operations. Additionally each commander was given a general concept of how other commander's operations would proceed so direct coordination



Note: Sherman's "Army Group" is considered as such strictly from a command and control/organizational perspective. It was, in fact, smaller than the Army of the Potomac with Schofield and McClellan's armies, for example, consisting of only one Corps in the former and two in the latter. Same can be said of Sigel's army in that it consisted of Ord's VIII Corps and a mixed force under Crook. In all of these armies the title of army was retained for morale, and no doubt, the ego of the commanders. Often criticized for over extending his assets, note the absence of a strategic reserve in Grant's plan.

Sherman	Department of the Mississippi
Thomas	Army of the Cumberland
Schofield	Army of the Ohio
McPherson	Army of the Tennessee
Banks	Department of the Gulf/Red River Expedition
Butler	Army of the James
Meade	Army of the Potomac
Sigel	Army of West Virginia

FIGURE 7

Source: Discussion with Dr. William Glenn Robertson, USACGSC - CSI and Grant as Military Commander by J. Marshall-Cornwall.

could be affected. Limits of authority were also outlined.[64]

Grant's maps and orders for the 1864 campaign are excellent historical examples of early operational planning. They are models even by today's standard and as a result of their quality they aided the subsequent command and control effort immeasurably. A study of the Official Record also reflects the role played by Grant's staff in the preparation, distribution and explanation of the initial and subsequent orders.

Prior to the beginning of the campaign Grant's staff underwent minor reorganization primarily in promotions and institutionalization of key staff positions. Most armies in the field had major generals as chiefs of staff and aides-de-camp of largely field grade rank. It was therefore necessary for Grant to obtain promotion for his own staff. Promotion was especially important for Grant's Chief of Staff, Brigadier General John A. Rawlins, who had been with Grant since the beginning of the war and was considered a trusted advisor and confidant. On 25 March promotions were requested and shortly thereafter approved. At the campaigns outset Grant's official staff consisted of 13 officers; a Chief of Staff, an Assistant Adjutant General with two assistants, five aides-de-camp, an Assistant Inspector General, an Assistant Quartermaster and two Military Secretaries.[65]

Grant's headquarters was initially located between the front line and the Headquarters of the Army of the Potomac. Its proximity to the front (only six miles) has been criticized for a number of reasons. First, and most obvious, was the risk associated with its being too close to the enemy. Second, its location fed the impression that it was the headquarters of the Army of the Potomac versus the actual commander's, General Meade. A final criticism was that by being so closely tied to the Army of the Potomac and Grant periodically failed to grasp the "big picture." Regardless of its location, from that field headquarters countless orders streamed directly to subordinate armies directly or through Halleck. An excellent example is the 30 March telegram ordering an all out effort in mustering manpower in anticipation of the spring offensive (See Enclosure C).[66]

From the mundane to the monumental, orders were sent by dispatch, telegram and flag telegraphy depending on the nature, classification and priority. Often the orders would be accompanied or followed-up upon by one of Grant's staff officers in a directed telescope role. The staff officer would assist in answering questions or in clarification and communication of the General-in-Chief's thoughts behind an order. An April 17, 1864 dispatch to MG Banks serves as another excellent example:

> Owing to the difficulty of giving positive instructions to a distant commander respecting his operations in the

> field, and being exceedingly anxious that the whole Army should act nearly as a unit, I send Maj. Gen. Hunter, an officer of rank and experience...It is not intended that Gen Hunter shall give orders, in my name, further th(an) the instructions addressed to him are such orders but to express more fully my views th(an) I can well do on paper.[67]

A second example of one of Grant's directed telescopes in action can be seen in a 19 April letter to General Butler:

> I send Lt. Col Dent, of my staff, with this not with the view of changing any instructions heretofore given, but more particular to secure full-cooperation between your command and that of Gen. Meade. I will expect...you to move from Fortress Monroe the same day Gen. Meade starts from here. The exact time I will telegraph...[68]

Grant obviously saw the utility of using directed telescopes for command and control purposes. It is to be emphasized, however, that they were not just any officers, but usually trusted subordinates and associates like Lieutenant Colonels Comstock, Porter and Dent.[69]

If directed telescopes with written orders was the principle means of communicating plans, then the telegraph was the main instrument of coordinating their initiation and execution. Once again the Official Record is replete with examples of Grant's use of this means to exercise command and control. This is especially true during the days preceding the campaign and immediately after its initiation. Grant had an experienced signal structure in the Army of the Potomac and it proved equal to the challenge of keeping communications open to Washington as well as within the Army of the Potomac and other armies in the eastern theater.

As time grew closer to the commencement of the campaign telegraph traffic addressing unit movements increased greatly throughout the Union Army. On 28 April, at 11 PM, Grant telegraphed Sherman, "Get your forces up so as to, move by the 5th."[70] Similar telegrams were sent to Butler, Burnside and Sigel outlining when to go on the march. The intensity of the tone of the traffic can be seen in a 2 May telegram from Grant to Sherman:

> Move at the time indicated in my instructions, all will strike together.[71]

Sherman's reply, by telegram only two hours later, was equally cryptic:

> Dispatch of today received. We will be on time (Sherman had sent Grant a complete review of his course of action a day earlier--by telegram).[72]

Described today as "crosstalk," this last minute coordination between headquarters was accomplished largely through the telegraph. Rudimentary telegraph traffic of staff officers at all levels also increased during this period. Far from the lofty issues of operational command per se they dealt with functionally critical issues from baggage reduction to artillery organization for combat, bridging and even convoy/column control. The telegraph was used so extensively that it became an almost ubiquitous part of the headquarters. The Army of the Potomac was especially

rich in telegraphic assets with even divisions having habitually associated telegraph teams.

Grant describes in great detail in his memoirs the equipment and personnel operating the telegraph wagons surrounding his headquarters. He emphasized that there were wagons with "each division, each corps and one for my headquarters."[73] He also states that the telegraph teams of the Army of the Potomac were so proficient in intra-army communications that "in a few minutes longer than it took a mule to walk a length of coil, telegraphic communication would be effected between all the headquarters of the army."[74]

As far as strategic-operational communications outside the Army of the Potomac, the Telegraph Service proved equally adept. Aide de camp LTC Badeau asserts that during the initial movement across the Rapidan the armies of the Union moved "synchronously by telegraph" with Sherman in Georgia, Crook in West Virginia, Sigel in the Shenandoah and with Butler on the James.[75] At the same time communication with Washington was continuous either by telegraph or the Potomac Line's flag stations.

The operational command and control use of the telegraph by General Grant during his final campaign can be best described by one of his own telegraphers, J. O. O'Brien:

> Throughout the remainder of the war Grant received almost daily reports by telegraph from all the armies in

> the field, and issued his orders, in cipher, over our wires to all his lieutenants in pursuance of one comprehensive plan.[76]

An excellent example of what O'Brien was talking about is an 11 May telegram to Meade during the Battle of the Wilderness (See Enclosure D).

Equally effective telegraph support was provided to Sherman who used both flag and electro-magnetic telegraphy extensively during the Atlanta Campaign. As Sherman said:

> There was perfect concert of action between the Armies of Virginia and Georgia in all of 1864; hardly a day intervened when General Grant did not know the exact state of facts with me, more than 1500 miles off, as the wires ran.[77]

It is clear that the campaign plan of 1864 could not have been executed as well as it was without the telegraph--if at all. An analysis of the planning behind the campaign, and the nature of telegraphic traffic at all levels immediately prior to its beginning and in its first two weeks reveals the reliance operational commanders placed on the medium.

Conclusion

Historians have largely defined the American Civil War experience as either the first modern war or the last Napoleonic. The conflict displayed characteristics of both becoming more modern as it progressed including use of rifled cannon, entrenchments, and the telegraph.

Additionally, the overwhelming majority of historians have classified the war as being fought at two traditional levels--strategic and tactical. This is understandable in that the American military itself has done much the same until recent years. This somewhat parochial perspective, combined with the scarcity of historiography dealing with command method, has resulted in a number of conclusions that may not be entirely accurate when the war is viewed through a third level--the operational.

If the operational level of war is where traditional grand strategy is translated into battlefield action vis a vis tactics, then the means, or level, that the translation takes place is critical. The level, in which theory-based intellectual thought is converted to physical violence, is the realm of operational planning and command and control. That translation was General Grant's greatest challenge when he assumed command of the United States Army in March 1864. It is clear by the criteria established in this study that he fully met the challenge with a command and control system that enabled him to plan and execute simultaneous, synchronized and successive engagements with independent armies in support of a clear strategic vision. Simply stated, he exercised operational art with a command and control system that has never received its historical due. Consequently this study demands that several generalizations about Civil War command and control be revisited.

One common assertion is that there were no standard operational staffs in the Civil War (at least staffs as we know them today).[78] That is true, for even though staffs were authorized at all levels by existing Field Service Regulations of the period they were highly personalized and essentially ad hoc. Their procedures were informal and amateurish. The Union Army's operations of 1864-65, however, demanded new staff procedures. So it was with Grant's staff that many modern American operational staff concepts began.[79]

Another position is that there were no G-3s or operations officers and that the commanding generals fulfilled that role.[80] Here too Grant's staff planning system may prove an exception. Even though Grant chose to write most of his orders personally, a study of the correspondence of his staff reveals that many officers, including Rawlins, Comstock and others were deeply involved in the operational planning and orders preparation process. No doubt commanders played a vital role. They still do today providing commander's guidance, intent and deciding on courses of action. Indeed that is what several famous Union generals late in the Civil War were doing. Nevertheless, what is key to this study is not who prepares the plan as much as how it is communicated to subordinates and how they supervised its execution.

In the case of the final campaign of the war the Official

Record reveals a near wholesale restructuring of the Army in March-April 1864. These changes set the stage for the campaign's successful planning and execution. One also sees the communication of missions and objective through well written orders that were accompanied by maps labelled with what amounts to strategic-operational graphics. These orders were in essence campaign plans tailored to each subordinate operational command whether it be field army, supporting department or independent corps. Additionally, many were accompanied by staff officers who understood the ideas or intent behind the orders and most likely played a role in their being written.

Little doubt exists that at the tactical level couriers, staff or cavalry riders, were the principle means of command and control. At the strategic level the telegraph was obviously the most valuable system. At the operational level both systems were equally critical with couriers being of greatest value during the planning phase while the telegraph proved more critical in the execution phase. This study shows that operational command and control during Grant's campaign would have been impossible without all three systems--couriers, wig-wag and telegraph.

Nevertheless, there is a final important point to be emphasized. By today's standard Civil War command and control systems were primitive in terms of both their speed and capability. Still, they demanded officers who were

masters of the spoken and, even more important from the perspective of operational planning and command and control, the written word. As in the Civil War, today's planners must be clear thinkers, gifted communicators and skilled writers. Even so, it would be hard for them to duplicate Grant's achievement of 1864 of putting a million soldiers on campaign with only a handful of staff officers and a few hastily written orders.

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56. Fuller, P. 207.

57. In The Papers of U.S. Grant, there are eight telegraphs or dispatches associated with the reorganization effort during the period 11-21 March. A review of the Official Record reveals even more. An excellent example of the nature of this traffic is a brief March 14 telegraph from Grant to Schofield, "Order the 9th Army Corps to Annapolis, Md as soon as possible"(OR I, XXXII, Pt 3). A second example is a 4 April dispatch consolidating the 11th and 12th Corps, activating the 1st Corps and appointing new commanders for the 4th and 23d Corps (OR I, XXXII, Pt 3, P 246-247).

58. Allan R. Millett and Peter Maslowski, For the Common Defense, (New York: The Free Press, 1984) P. 221.

59. Wilson, P. 221.

60. Ibid, P. 219.

61. Ibid, P. 253.

62. Official Record, Series I, Volume XXXII, (Washington, DC: U.S. Government Printing Office, 1891) P. 799.

63. Marshall-Cornwall, P. 138.

64. Commander's intent is to move simultaneously on Atlanta and Richmond while other armies conduct operations in support of the main effort. Centers of Gravity and objective points are Lee's and Johnston's armies. Decisive Points are Mobile, the Virginia & Tennessee Railroad, City Point etc. Phases are apparent in the sequence of movement and attainment of objectives. The end state is the destruction of the Confederate Armies.

65. Wilson, P. 221.

66. Ibid, P. 240.

67. Ibid, P. 298.

68. Ibid, P. 327.

69. Griffin, P. 9 and Keegan, P. 195-196.

70. Wilson, P. 354.

71. Ibid, P. 355.

72. Ibid, P. 355.

73. U.S. Grant, Personal Memoirs of US Grant, (New York: World Publishing Co. 1895) P. 409.

74. Ibid, P. 410.

75. John O'Brien, Telegraphy in Battle, (Wilkes-Barre, PA: Raeder Press, 1910) P. 142.

76. Ibid, P. 143.

77. W.T. Sherman, Memoirs of General T. Sherman, (New York: DeCapo Press, 1984) P. 298.

78. Hagerman, P. 22.

79. Ibid, P. XVI.

80. H.C.B. Rogers, The Confederates and Federals at War, (New York: Hippocrene Books, Inc, P. 132. Rogers describes Grant's staff during this period as "efficient." He also considers the planning of the Final Campaign a "staff masterpiece" (P. 139).